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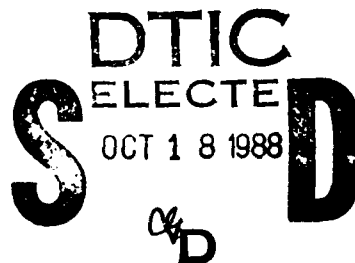
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**BIBLIOGRAPHY OF DOCUMENTS RELATED TO THE  
THEORY, OPERATION AND PERFORMANCE  
OF COAXIAL PLASMA GUNS**

D. W. Price

September 1988

Final Report



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**AIR FORCE WEAPONS LABORATORY**  
Air Force Systems Command  
Kirtland Air Force Base, NM 87117-6008

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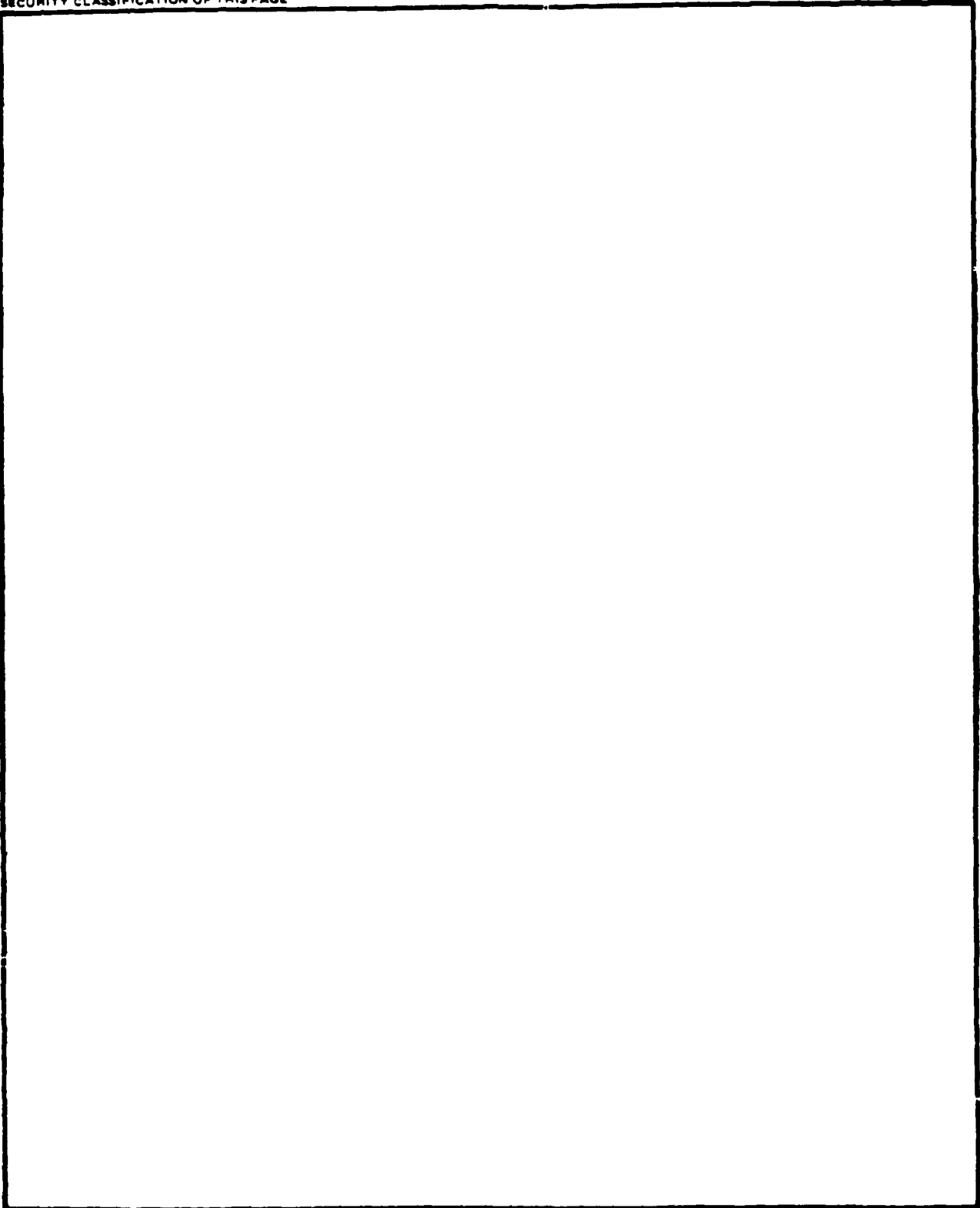
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19 ABSTRACT (Continue on reverse if necessary and identify by block number) Coaxial plasma guns are used to create plasmas of interest to the Air Force. Experimental and theoretical coaxial plasma gun research has been performed since the early 1960s to the present. Research on coaxial plasma gun topics has been done in the Soviet Union, both Eastern and Western Europe, Japan and the United States. This report is a bibliographic collection of unclassified unlimited distribution references dealing with coaxial plasma guns directly or indirectly. These references deal with the theory, operational behavior or applications of coaxial plasma guns under both laboratory and research conditions. Other systems related to coaxial plasma guns (such as the linear z-pinch, dense plasma focus, compact toroids and other plasma sources) are referenced as well. A total of 771 separate English language references are listed.				
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## INTRODUCTION

This bibliography is provided for use in the analysis and operation of coaxial plasma guns. Plasmas in these guns are formed by inserting gases into the gun muzzle and applying high voltage across the gun electrodes. The gas is ionized by the induced electric field, causing a radial current  $J$  formation. This radial current  $J$  produces an azimuthal magnetic field  $B_\theta$ . The  $J \times B$  force drives the current with an axial velocity  $v_z$ . This axial current can then be used in a variety of ways, many of which are summarized in the references reported here.

Because the focus of this bibliography is on coaxial plasma guns, references to other plasma guns are limited. References are listed, however, if the source reports parameters applicable to the coaxial gun. Papers on dense plasma focus (DPF) are also cited, not for the focus physics, but because the DPF is generated with a coaxial gun and affected by the coaxial gun plasma generation. Compact toroids are also mentioned for similar reasons. Although such articles are not directed toward coaxial plasma guns, they do contain relevant information.

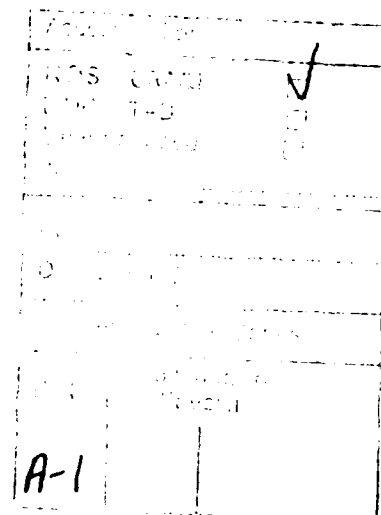
This bibliography contains many references which apply to the theory, operation and performance of coaxial plasma guns. There is no intent to ignore any relevant source. However, the references cited here are only a partial listing, and they are limited by the following restrictions:

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